

Princeton Collaborative Low Temperature Plasma Research Facility (PCRF)

The 2nd Annual User Meeting, August 17-18, 2022

Agenda

WEDNESDAY, AUGUST 17, 9:30 AM-6:10 PM, EDT

Zoom for Day 1: <https://pppl.zoom.us/j/94602235087>

Opening Session

Session Chair: Yevgeny Raitses, PCRF PI/Director, PPPL

9:30 am	Opening remarks	David Graves, Associate Laboratory Director for Low Temperature Plasma Surface Interactions, PPPL Philip Efthimion, Head of the Plasma Science & Technology Department, PPPL Howard Stone, Chair, Mechanical and Aerospace (MAE) Eng. Department, Princeton University
	Meeting Agenda	Yevgeny Raitses (PCRF PI) and Igor Kaganovich (co-PI), PPPL and Mikhail Shneider (co-PI), MAE Princeton University
	PCRF Annual Report	Yevgeny Raitses, PPPL

Technical User Session 1

Session Chair: Sophia Gershman, PCRF Researcher, PPPL

10:00 am	Understanding boundaries between regimes during the plasma synthesis of ammonia on mesoporous oxide-based catalysts through plasma diagnostics	Maria Carreon, University of Massachusetts at Lowell
10:20 am	Measurement of decomposition products from the interaction of atmospheric pressure nonthermal plasma and polymer substrate	John Foster, University of Michigan, Ann Arbor
10:40 am	To investigate the influence of biological substrates on dielectric barrier discharge composition	Vandana Miller, MD, Drexel University College of Medicine
11:00 am	Particle trapping in low pressure plasmas and its role for the synthesis of nanoparticles and 2d materials (invited)	Uwe Kortshagen, University of Minnesota, PCRF Advisory Board Member
11:25 am	Lunch Break	

12:00 pm	<u>DOE-FES Collaborative Facilities</u>	Nirmol Podder, DOE-FES Program Manager
12:20	Preparations for the discussion sessions: Feedback by Users	Bruce Locke, FSU PCRf User Organization and Yevgeny Raitses, PCRf Director, PPPL

Technical User Session 2

Session Chair: Igor Kaganovich, PCRf, Co-PI, PPPL

12:40 pm	Simulations of hydrogen plasma discharges	Thomas Schenkel, LBNL
1:00 pm	Investigation of air ionized plasma for high energy beam propagation in air using plasma codes to validate experimental results	Prabir Roy, LANL
1:20 pm	Non-invasive neutral atom density measurements in a linear, quasi-steady-state plasma device	Sam Cohen, PPPL
1:40 pm	Reduced order modeling and quantification of uncertainty for plasma chemical dynamics (invited)	Tiernan Casey, Sandia NLs, PCRf User Organization
2:05 pm	Break	

Technical User Session 3

Session Chair: Mikhail Shneider, PCRf, co-PI, MAE Princeton University

2:10 pm	Some thoughts on plasma research needs of the semiconductor industry (invited)	Shahid Rauf, Applied Materials, Santa Clara, CA
2:35 pm	Probing metastable species in electron beam generated plasmas	Scott Walton, NRL
2:55 pm	Modeling of liquid surface instabilities interacting with partially ionized plasmas	Kentaro Hara, Stanford University
3:15 pm	Control of the fuel droplets heating and evaporation by the laser pulse	Albina Tropina, Texas A&M University
3:35 pm	Plasma-bubble imaging and spectroscopy	Katharina Stapelmann, North Carolina State University
3:55 pm	Break	

Technical User Session 4

Session Chair: Arthur Dogariu, PCRf Researcher, MAE Princeton University

4:00 pm	Electric fields inside streamer coroneae and self-pulsating mode under DC voltage	Carmen Guerra-Garcia, MIT
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4:20 pm	Waves of electric charge generated by pulse corona of alternating polarity	Sergey Leonov, University of Notre Dame
4:40 pm	Coupling of plasma diagnostics with bulk liquid chemistry for improved understanding of solvation processes at plasma-water interface	Selma Mededovic Thagard, Clarkson University
5:00 pm	Translational and vibrational temperature evolution in fuel/air flows as a function of pulse repetition frequency using ns discharges	Timothy Ombrello, AFRL
5:20 pm	Break	

Discussion Session 1

5:25 pm	User feedback on PCRf solicitation, projects, supports, etc., user needs, recommendations to PCRf	Moderated by PCRf User Organization: Bruce Locke (FSU), Ternan Casey (SNLs), Michael Keidar (GWU), and Danil Dobrynin (Drexel)
6:00 pm-6:10 pm	Adjourn/Summary	Yevgeny Raitses, PCRf, PPPL

THURSDAY, AUGUST 18, 9:30 AM-1:00 PM, EDT

Zoom for Day 2: <https://pppl.zoom.us/j/94602235087>

9:30 am	Welcome/Meeting agenda	Yevgeny Raitses, PCRf-PPPL
9:35 am	New LTP Initiatives at PPPL (invited)	David Graves, Associate Lab Director, PPPL

Technical User Session 5

Session Chair: Shurik Yatom, PCRf Researcher, PPPL

10:00 am	Correlating plasma properties to liquid chemistry in a nanosecond pulsed helium gas-liquid water discharge	Bruce Locke, Florida State University
10:20 am	Adaptive plasmas (invited)	Mikhail Keidar, George Washington University

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| 10:45 am | Measurements of OH radical concentrations in uniform and non-uniform ns-pulsed atmospheric air DBD plasma. | Danil Dobrynin, Drexel University |
| 11:05 am | Cold atmospheric plasma for promoting neural regeneration | Gal Haspel, New Jersey Institute of Technology |
| 11:25 am | Break | |

Technical PCRF Session 1

Session co-Chair: Philip Efthimion, PST Department Head, PPPL and Bruce Locke, PCRF User Organization, Florida State University

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| 11:30 am | PCRF Diagnostics capabilities and resources | Shurik Yatom (PPPL) and Arthur Dogariu (MAE, Princeton University) |
| 11:50 am | PCRF Theoretical and computational resources | Igor Kaganovich (PPPL) and Mikhail Shneider (MAE, Princeton University) |
| 12:10 pm | PCRF Plasma sources and experiments | Sophia Gershman and Yevgeny Raitses (PPPL) |

Break/Working lunch: Discussion Session 2

Moderators: Bruce Locke Chair, PCRF User Organization, FSU, and Philip Efthimion, PST Department Head, PPPL

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| 12:30 pm | PCRF Need & Plans | |
| 1:00 pm | Adjourn | Yevgeny Raitses, PCRF, PPPL |